

SPECTRUM

ANALOG ELECTRONIC FILTERS

TYPE
LH-42D

(Illustrated in cabinet)

A seventh-order Butterworth Dual ANALOG Filter. Each section usable independently, high-pass or direct-coupled low-pass. Combined operation provides bandpass or band reject characteristics. Made in eight cut-off tuning ranges designated by style letter as follows:

Style "A".....	20 - 200,000 cps
Style "B".....	2 - 20,000 cps
Style "C".....	0.2 - 2,000 cps
Style "D".....	2 - 200,000 cps
Style "E".....	0.2 - 20,000 cps
Style "F".....	0.2 - 200,000 cps
Style "G".....	0.02 - 2,000 cps
Style "H".....	0.02 - 20,000 cps



All styles standard 19" rack mounting. 7" high, 15" deep. Weight 44 lbs. Accessory cabinet available at additional cost. The following specifications are common to all styles (each unit).

Input impedance5.6 megohms shunted by 10 pf.
 Output impedanceUnder 150 ohms
 GainUnity
 Passband Flatness $\pm 1/4$ db. ($\pm 1/2$ db in 20-200KC Range)
 Calibration of Cutoff2%, with resolution better than 1%

AVAILABLE TO CUSTOMER SPECIFICATIONS

- Fixed Tuned Bandpass ANALOG Filter Arrays for Real-Time Spectrum Analysis.
- Pre-Commutation Direct-Coupled Lowpass ANALOG Filters for Digitizing Systems and Telemetry.
- Scanning Spectrum Analyzers for Sideband Analysis.

WRITE FOR COMPLETE INFORMATION

SPECTRUM

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SERIES LH-42 analog filters

Spectrum Instruments Type LH-42 ANALOG Filter is an active network device usable singly or in pairs to accomplish a wide variety of frequency selective functions. The basic unit is operable as either a highpass filter or as a direct coupled lowpass filter with d.c. response and very low drift of the d.c. baseline. Pass band available extends from zero frequency to several megacycles and the cutoff frequency is continuously tunable to a maximum of six decades (depending upon style designation) from a minimum of 0.019 to a maximum of 215,000 cycles per second. Two unit LH-42 filters in a single standard rack panel package comprise the LH-42D filter, which offers maximum flexibility of operating modes. The LH-42 features high input impedance, high signal level capacity, low output impedance and unity gain in all decades, highpass or lowpass

PROTOTYPE: Seventh order Butterworth passive filter with ideal damping constants.

TUNING: By precision capacitor decades and interpolation precision rheostat assembly with four inch calibrated dial.

MODES (1) highpass, (2) direct coupled lowpass, (3) a-c coupled lowpass with eight second input time constant. Stopband attenuation is at rate of 42 decibels per octave. Operating modes (highpass or lowpass) are selected by a panel control independent of the cutoff adjustment. Two unit LH-42 filters may be interconnected to achieve bandpass, bandstop or steep 84 db/octave cutoff rate, highpass or lowpass.

PASS BAND: Flat from d.c. (zero frequency) to 2.5 megacycles/sec. Highpass output usable to over 5 megacycles/sec.

INPUT IMPEDANCE: Five megohms resistive, shunted by 10 pf

OUTPUT CHARACTERISTICS: Impedance under 150 ohms throughout passband range; output direct coupled in all modes, with d-c offset balancing provision on front panel (hence no spurious phase shift due to blocking capacitors); maximum open circuit 35 volts peak (70 volts peak to peak); maximum short circuit current 10 ma. (20 ma. peak to peak)

PASS BAND GAIN: Unity, plus or minus 1/4 db in all decades and both modes, (plus or minus 1/2 db in 20-200 kc ranges)

PASS BAND FLATNESS: Plus or minus 1/4 db.

NOISE: Under 150 microvolts rms, (one cycle/sec. to 200kc./sec.)

SPECIAL FEATURES: High-Reliability and missile type vacuum tubes used in all critical circuits to insure long trouble-free performance and low microphonism; range determining capacitors pre-aged and selected in matched sets; decade interpolation by stable precision rheostat assembly with large four inch dial; long-term calibration accuracy better than 2%; cutoff

resolution better than 1%; power to active networks precision regulated for stability and isolation from line (regulator complement includes (1) master anode supply regulator, (2) independent regulation of positive and negative supplies and regulated d-c supply for active tube heaters); fused line, anode and heater supplies for maximum protection; three year comprehensive warranty.

CUTOFF TUNING RANGE: Type LH-42 ANALOG Filters are available in several different ranges of cutoff tuning, designated by a style letter. Other specifications are identical irrespective of style. All frequency decades are based upon the figure "2" at the dial extremes, the actual cutoff setting being the dial reading multiplied by the decade switch factor. Standard style designations with equivalent extreme range of available cutoff frequency, are as follows:

- Style "A" -	Cutoff Range	19 - 215,000 cps
- Style "B" -	" "	1.9 - 21,500 cps
- Style "C" -	" "	0.19 - 2,150 cps
- Style "D" -	" "	1.9 - 215,000 cps
- Style "E" -	" "	0.19 - 21,500 cps
- Style "F" -	" "	0.19 - 215,000 cps
- Style "G" -	" "	0.019 - 2,150 cps